DUKANE

Intelligent Assembly Solutions

iQ Series

ULTRASONIC GENERATOR/POWER SUPPLY

LS-E

AUTOMATED HAND PROBE PRESS

Power and Frequencies from
600W to 4800W/40, 30, 20, 15kHz

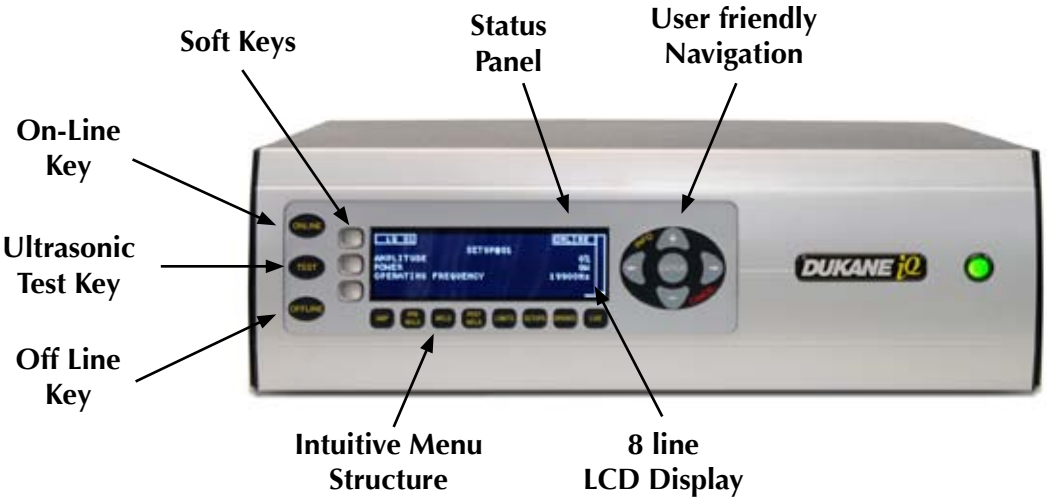
Description

The ***iQ*** series generators are all built around our patented digital design. Compact in size, they provide the highest power density in the smallest package, while incorporating our exclusive flow through cooling. These generators are designed to handle the toughest applications and environments, capable of operating either in continuous duty or high-speed automation. Our industry leading 0.5 millisecond multi-core processing speed provides the highest level of accuracy and repeatability. The unique modular design allows for custom configurations and ultimate flexibility. This series is compatible with all your current Dukane hand probes, automation probes and converters.

Digital Features

- **100% digital control** of all power supply functions and parameters allows for unique configurations and future upgrades or requirements. Includes digital frequency synthesis.
- Industry leading data **acquisition rate speed of 0.5 ms** due to advanced **multi-core architecture.** Increased weld accuracy and repeatability.
- **Three step system safe power up sequence** 1) AC power inrush protection, 2) Supervisory System Monitor 3) Plug and Play configuration ID.
- **Digi-Trac** tuning automatically tracks the resonant frequency digitally. Adjust the output frequency to match the acoustic stack (sonotrode, booster, and transducer) this is done for every weld cycle and eliminates the need to manually tune the generator.
- **Ultrasonic overload protection**, with detailed fault description for ease of troubleshooting. The overload power limit is based on true RMS power output level.
- **Line Voltage Regulation** compensates for line fluctuations assuring consistent amplitude.
- **Temperature Drift Compensation** allows for seamless acoustic stack operation, and automatically compensates for acoustic stack temperature changes.
- **Patented Pulse-Width Modulation** design delivers power more efficiently with substantially less stress on the electrical and acoustic components for superior performance, reliability and extended life.
- **Linear Ramp Up (Soft-start)** algorithm brings the acoustic stack to operating amplitude smoothly, minimizing start-up surges and abnormal stress to the stack and power supply.
- **Load Regulation** provides constant ultrasound amplitude automatically regardless of the power draw. The ultrasonic output amplitude level is held to within 1%, to provide weld process consistency and reduced weld cycle times.
- **Easy Fault** is exclusive to ***iQ*** power supplies. System faults and alarms prompt a fault code. (i.e U501) Enter that code at **www.dukane.com/easyfault** and the easy fault search will provide additional tips and process improvement information. Thus expediting fault/alarm solutions and reducing down time.

FRONT



100% digitally controlled

Mechanical Features

- **Flow Through Cooling** tunnel with a matched high performance heat sink and thermostatically controlled fan reduces thermal gradients, minimizes dirt infiltration and increases component life.

- **Highest power density** per unit of volume. Most power in the smallest package at highest duty cycle. Low and high profile configurations available.
- **Power Bar Graph,** during the welding process displays actual % of unit's power availability.
- **8 line LCD** display with intuitive menu structure for quick easy programming.
- **RS232 serial configuration port** is used for field software upgrades, troubleshooting and advance hardware setup with optional PC based ***iQ*** configurator.
- **Advanced I/O is standard** with 25-pin output, and15-pin input, user configurable from the utility menu. Visit: **www.dukane.com/us** go to **downloads/ application notes** for your plastic assembly needs.
- Unique **Patented modular hardware design** incorporates motherboard/interconnect of internal components. Reduces internal cabling while increasing reliability and performance.

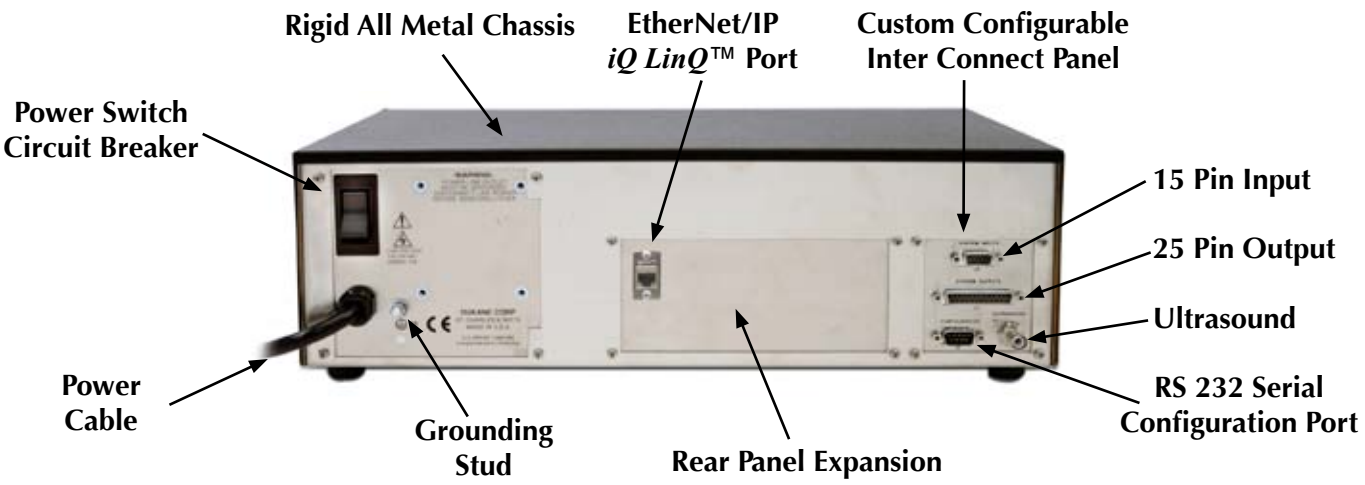
Trigger by Power (U.S. Patent 7,475,801)

The Trigger by Power option can produce more consistent welds. It does so by requiring that a sufficient and repeatable pressure/force is applied to the part before the weld cycle starts. Trigger by Power is a cost effective alternative to trigger by force. However, unlike trigger by force, Trigger by Power doesn't need additional, costly components such as a load cell, amplifier board or cabling. In effect, the system uses the ultrasonic stack as a load cell. When ultrasound is activated, the amplitude ramps up to the trigger amplitude setting and held there until enough force is applied to the part to reach the trigger power setting. At that point the weld cycle begins and continues until the weld control parameter (Time, Energy or Power) is reached.

- **Rear panel expansion** slots are available to allow for custom configurations for OEM and cost effective custom solutions.

- **Process statistics window** displays part count and % of good, bad and suspect welds.
- **System status panel** displays any of six self-diagnostic messages, including Fault, Input test, Overload, Overtemperature, On-line, or Off-line.
- **Integrated frequency analyzer** accurately displays operating frequency of the acoustic stack. This is perfect for acoustic stack diagnostics.

BACK



Mechanical Features. . .*continued from previous page.*

- **Standard 19″** (48cm) **Rack** mountable for easy system integration at minimal cost.
- **Compatibility** with all Dukane standard transducers, helps reduce inventory requirements and provides interchangeability with your existing DPC or Ultra series components.

Menu Controls

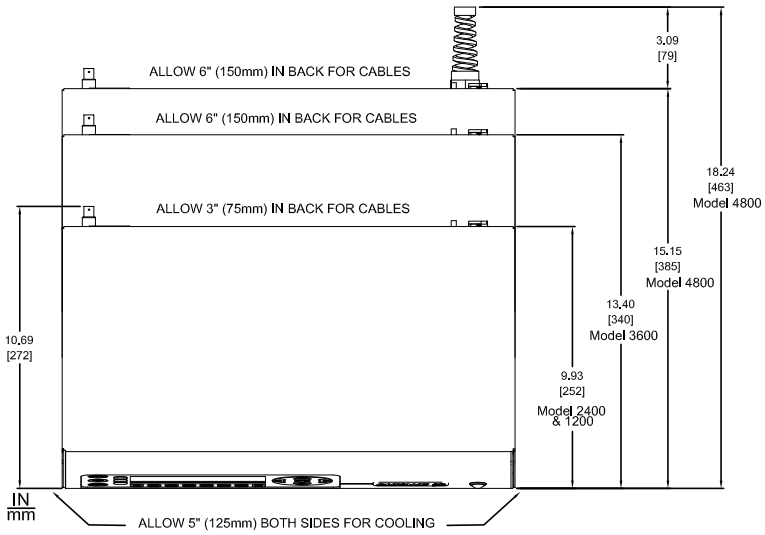
- Primary and secondary weld control parameters **Time, Energy, and Peak Power.**

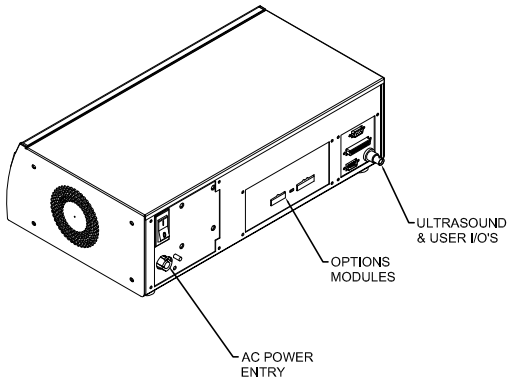
- **Bad and suspect process limits** include Time, Time and Energy, and Peak Power, with discrete outputs. These programmable limits provide the means to adapt to a wide variety of welding applications.
- **Amplitude adjustment** in 1% increments from 100% to 20% through front panel or remote (4-20) mA.
- **16 setups** with individual user ID. (including Amplitude %)
- **Programmable softstart** and amplitude can be used to reduce stress on acoustic stacks, or for high-speed application to achieve full amplitude in as short as .010 seconds. Factory configurable settings also available.
- **User-accessible programmable advanced hardware** settings allows changes to Phase Shift, Free Run Frequency, Frequency Lock/Hold and Frequency Limits – providing advance settings for difficult acoustic stacks.
- Selectable **frequency Lock and Hold** feature system ignores digi-trac automatic tuning feature and locks to startup stack frequency – helps in difficult applications where the stack couples with a product.
- **Programmable frequency bandwidth,** three selectable factory settings or user programmable windows for unique acoustic stacks and applications.
- **Afterburst control** includes delay and duration time settings

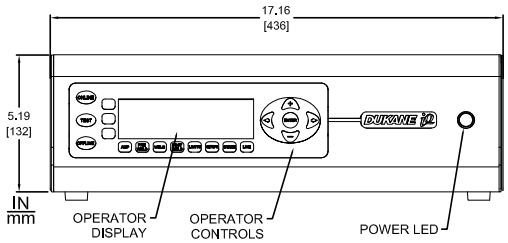
Options

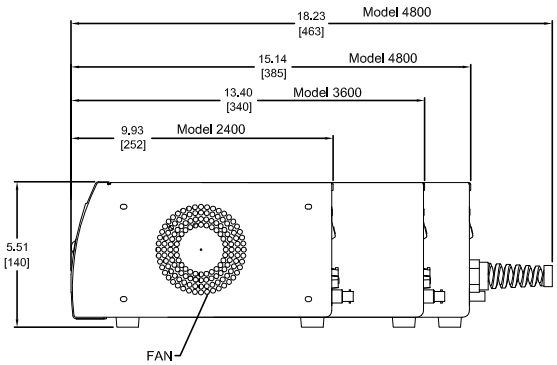
- The user can select one of the following ***iQ LinQ***:™ Multi-probe Control (MPC), Automation Thruster Control, or Remote Amplitude. Additional module for converting isolated I/O from NPN (standard) to PNP is available.
- 19″ rack mount bracket panel mount configurations are available for equipment cabinet installations.

Dimensions









WEIGHT: 34 LBS

MODELS

Power / Frequency / Profile	600 W	900 W	1200 W	1800 W	2400 W	3600 W	4800 W
15 kHz						X	X
20 kHz			X	X	X	X	X
30 kHz	X	X	X	X			
40 kHz	X	X	X				
Max. current:	10 amps	10 amps	15 amps	15 amps	15 amps	30 amps	30 amps

Note: All specifications are subject to change without notice. Please consult Dukane Ultrasonics for any updated information.

RoHS

DUKANE
ISO 9001
www.dukane.com/ISO-Cert.pdf

CE

TÜVRheinland